

Application No. 10/730,162  
Paper Dated: August 11, 2008  
In Reply to USPTO Correspondence of May 9, 2008  
Attorney Docket No. 4444-032065

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mesh serves as a center vein between two elements allowing these bender elements to move relative to each other. In the Action, the Examiner references Figs. 3 and 4 (Reference No. 35) and column 3, lines 59-63 of the Bost patent as allegedly teaching "a diaphragm having a woven base made of an untwisted fiber monofilament." The Examiner goes on to note that it is well known that a monofilament fiber is untwisted, as defined by the Merriam-Webster dictionary. The Examiner further indicates that it would be obvious to one skilled in the art to combine these various references together, and with specific reference to the Bost patent, this combination would provide a base material that is very thin to easily obtain a flexing of the diaphragm.

The referenced section of the Bost patent reads as follows:

The structure is formed by interweaving monofilament polyester threads 35 as shown in plan view in FIG. 4 and as shown in a sectional side view in FIG 3. A uniform nickel coating is provided on the polyester filament mesh.

Also, with respect to the Examiner's citation of the Non-Patent Literature (NPL) document (the Merriam-Webster dictionary), the cited definition of "monofilament" is "a single untwisted synthetic filament (as of nylon)."

The Cited Prior Art Does Not Teach or Suggest a  
Loudspeaker Diaphragm Set Forth in Independent Claims 1, 14, 15 and 17

First, and again, Applicants specifically incorporate herein by reference all of the arguments and comments made in the previously-filed responses and amendments provided to the Examiner throughout the lengthy prosecution of this application. With specific reference to the newly-cited Bost patent, and as discussed hereinabove, the Examiner has again conducted a search and now offers the Bost patent as allegedly teaching "a diaphragm having a woven base made of an untwisted fiber monofilament." While

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Applicants appreciate the Examiner's review of this document, it is respectfully submitted that the Bost patent fails to teach or suggest a loudspeaker diaphragm comprising a base layer having a woven fabric of a polyethylene naphthalate fiber impregnated with a thermosetting resin, wherein the polyethylene naphthalate fiber is untwisted.

The woven mesh 30 structure 34 in the Bost patent is not used to form the diaphragm cone 43, but instead used to form a bender structure 11. This bender structure is specifically used to drive the cone, which is a very specific and well-known function in such an arrangement. In particular, and since the bender structure 11 must move for functioning as a driver for the diaphragm, the required physical characteristics and resulting function is wholly different from the required characteristics and functions of the diaphragm, itself.

Further, Applicants submit that, in the structure and arrangement of the Bost patent, a nickel coating is provided on the mesh, such that the woven mesh 30 structure 34 and the piezoelectric disc 20 provides electrical connection therebetween, thus functioning as a transducer. Accordingly, the woven mesh 30 structure 34 of the Bost patent would not teach or suggest the use of a base layer having a woven fabric of a polyethylene naphthalate fiber impregnated with a thermosetting resin, wherein the polyethylene naphthalate fiber is untwisted, in connection with the diaphragm structure, as specifically set forth in each of independent claims 1, 14, 15 and 17 of the present application.

Still further, and again with respect to the Bost patent (at column 3, lines 59-60), the woven mesh 30 structure 34 "is formed by interweaving monofilament polyester threads 35...." (emphasis added). Applicants submit that it is well known to one skilled in the art that threads are twisted. Specifically, thread is formed by intertwining monofilaments in order to bundle them. As evidence of this, the Examiner's attention is directed to the definition of "thread" in the *McGraw-Hill Dictionary of Scientific and Technical Terms*

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*(Third Edition)*, which provides the following definition of "thread": "[a] continuous strand formed by spinning and twisting together short strands of textile fibers." (emphasis added). A copy of page 1642 of this Dictionary is attached hereto for the Examiner's convenience.

Still further, in the Action, the Examiner directs Applicants to the definition of "monofilament" in the online Merriam-Webster dictionary. Attached hereto, please also find the definition of "thread" in this specific NPL reference, which states the following definition of "thread": "a filament, a group of filaments twisted together, or a filamentous length formed by spinning and twisting short textile fibers into a continuous strand." (emphasis added). This definition further supports and evidences the "twisted" form of the monofilament polyester threads 35 that form the woven mesh 30 structure 34 described in the Bost patent.

In summary, and as is known to one of ordinary skill in the art, the components forming a woven fabric, e.g., fiber, yarn, roving, thread, filament, etc., are twisted to provide strength. The woven mesh 30 structure 34 of the Bost patent is formed by interweaving monofilament polyester threads 35, which are "twisted" by definition. Therefore, the structure and formation of the Bost arrangement specifically teaches away from the use of untwisted fibers. However, the invention set forth in claims 1, 14, 15 and 17 of the present application provides a unique and novel arrangement wherein an untwisted fiber is useful and functional. For at least these reasons, Applicants again submit that the cited prior art does not teach or suggest the diaphragm claimed in independent claims 1, 14, 15 and 17, and like the Ono patent before, the Bost patent does not describe (and specifically teaches against) the formation of a base layer having a woven fabric of a polyethylene naphthalate fiber impregnated with a thermosetting resin, wherein the polyethylene naphthalate fiber is untwisted.

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Summary

For the foregoing reasons, independent claim 1 is not anticipated by or rendered obvious over the prior art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Reconsideration of the rejection of independent claim 1 is respectfully requested. Claims 2-13 and 20 depend either directly or indirectly from and add further limitations to independent claim 1 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 1. Therefore, for these reasons, reconsideration of these rejections of claims 2-13 and 20 is respectfully requested.

For the reasons discussed hereinabove, independent claim 14 is not anticipated by or rendered obvious over the prior art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Reconsideration of the rejection of independent claim 14 is respectfully requested.

For the foregoing reasons, independent claim 15 is not anticipated by or rendered obvious over the prior art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Reconsideration of the rejection of independent claim 15 is respectfully requested. Claim 16 depends directly from and adds further limitations to independent claim 15 and is believed to be allowable for the reasons discussed hereinabove in connection with independent claim 15. Therefore, for these reasons, reconsideration of the rejection of claim 16 is respectfully requested.

Application No. 10/730,162  
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For the reasons discussed hereinabove, independent claim 17 is not anticipated by or rendered obvious over the prior art of record, whether used alone or in combination. There is no hint or suggestion in any of the references cited by the Examiner to combine these references in a manner which would render the invention, as claimed, obvious. Reconsideration of the rejection of independent claim 17 is respectfully requested. Claims 18 and 19 depend either directly or indirectly from and add further limitations to independent claim 17 and are believed to be allowable for the reasons discussed hereinabove in connection with independent claim 17. Therefore, for these reasons, reconsideration of the rejections of claims 18 and 19 is respectfully requested.

For all the foregoing reasons, Applicants believe that claims 1, 2 and 4-20 are patentable over the cited prior art and in condition for allowance. Reconsideration of the rejections and allowance of all pending claims 1, 2 and 4-20 are respectfully requested. To the extent the Examiner opts to again conduct a further search and/or maintains these rejections in view of the above arguments and discussion, Applicants specifically request an interview with the Examiner to discuss this matter prior to the filing of an Appeal.

Respectfully submitted,  
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1642 | thorium fluoride

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trodes. Also known as thoria; thorium anhydride; thorium oxide.

**thorium fluoride** [INORG CHEM]  $\text{ThF}_4$ . A white, toxic powder, melts at 1111°C; used to make thorium metal and magnesium-thorium alloys and in high-temperature ceramics.

**thorium nitrate** [INORG CHEM]  $\text{Th}(\text{NO}_3)_4 \cdot 4\text{H}_2\text{O}$ . Explosive white crystals soluble in water and alcohol, strong oxidizer; the anhydrous form decomposes at 500°C; used in medicine and as an analytical reagent.

**thorium oxalate** [ORG CHEM]  $\text{Th}(\text{C}_2\text{O}_4)_2 \cdot 2\text{H}_2\text{O}$ . A white, toxic powder soluble in alkalies and ammonium oxalate, insoluble in water and most acids, decomposes to thorium dioxide,  $\text{ThO}_2$ , above 300–400°C; used in ceramics.

**thorium oxide** See thorium dioxide.

**thorium reactor** [NUCLEO] A nuclear reactor in which thorium surrounds the central enriched uranium core to give breeder operation.

**thorium series** [NUCLEO] The series of nuclides resulting from the decay of thorium-232.

**thorium sulfate** [INORG CHEM]  $\text{Th}(\text{SO}_4)_2 \cdot 8\text{H}_2\text{O}$ . A white powder soluble in ice water, loses water at 42° and 400°C. Also known as normal thorium sulfate.

**thorium tetrachloride** See thorium chloride.

**thorn** [BOT] A short, sharp, rigid, leafless branch on a plant. [ZOO] Any of various sharp spiny structures on an animal.

**thornback** [VERT ZOO] *Raja clavata*. A ray found in European waters and characterized by spines on its back.

**thornbush** [ECOL] A vegetation class that is dominated by tall succulents and profusely branching smooth-barked deciduous hardwoods which vary in density from mesquite bush in the Caribbean to the open spurge thicket in Central Africa; the climate is that of a warm desert, except for a rather short intense rainy season. Also known as Dorngehölz; Dornesträuch; dormeild; savane armée; savane épineuse; thorn scrub.

**thorn forest** [ECOL] A type of forest formation, mostly tropical and subtropical, intermediate between desert and steppe; dominated by small trees and shrubs, many armed with thorns and spines; leaves are absent, succulent, or deciduous during long dry periods, which may also be cool; an example is the caatinga of northeastern Brazil.

**thorn scrub** See thornbush.

**thorogummite** [MINERAL] A silicate mineral and chemical variant of thorium silicate, with similar properties; isostructural with thorite and zircon; it is deficient in silica and contains small amounts of OH in substitution for oxygen.

**thoron** [NUC PHYS] The conventional name for radon-220. Symbolized  $\text{Rn}$ .

**thoroughfare** [CIV ENG] 1. An important, unobstructed public street or highway. 2. A street going through from one street to another. 3. An inland waterway for passage of ships usually not between two bodies of water.

**Thorpe reaction** [ORG CHEM] The reaction by which, in presence of lithium amides,  $\alpha,\omega$ -dinitriles undergo base-catalyzed condensation to cyclic iminonitriles, which can be hydrolyzed and decarboxylated to cyclic ketones.

**thortveitite** [MINERAL]  $(\text{Sc}, \text{Y})_2\text{Si}_2\text{O}_5$ . A grayish-green mineral occurring in orthorhombic crystals; a source of scandium.

**thou** See mil.

**thousandth mass unit** [PHYS] A unit of energy equal to the energy equivalent of a mass of  $10^{-3}$  atomic mass unit according to the Einstein mass-energy relation, that is, to the product of  $10^{-3}$  atomic mass unit and the square of the speed of light; equal to approximately  $1.49176 \times 10^{-13}$  joule.

**THPC** See tetrakis(hydroxymethyl)phosphonium chloride.

**thrashing** [COMPUT SCI] An undesirable condition in a multiprogramming system, due to overcommitment of main memory, in which the various tasks compete for pages and none can operate efficiently.

**thread** [DES ENG] A continuous helical rib, as on a screw or pipe. [GÉOL] An extremely small vein, even thinner than a stringer. [MIN ENG] A more or less straight line of tall faces, having no cuttings, loose ends, fast ends, or steps. [TEXT] A continuous strand formed by spinning and twisting together short strands of textile fibers.

**thread blight** [PL PATH] A fungus disease of a number of tropical and semitropical woody plants, including cocoa and tea, caused by species of *Pellicularia* and *Marasmius* which form filamentous mycelia on the surface of twigs and leaves.

**thread contour** [DES ENG] The shape of thread observed in a cross section along the major axis, for ex: square or round.

**thread count** [TEXT] An index of the compactness of a determined by counting the number of warp yarns and yarns in 1 square inch (6.4516 square centimeters); inc. Also known as cloth count.

**thread cutter** [MECH ENG] A tool used to cut screw on a pipe, screw, or bolt.

**threadfin** [VERT ZOO] Common name for any of the family Polynemidae.

**thread gage** [DES ENG] A design gage used to m screw threads.

**threading die** [MECH ENG] A die which may be sol adjustable, or spring adjustable, or a self-opening die used to produce an external thread on a part.

**threading machine** [MECH ENG] A tool used to cut threads inside or outside a cylinder or cone.

**thread-lace scoria** [GÉOL] Scoria whose vesicle wal collapsed and are represented only by a network of the

**thread plug** [ENG] Mold part which shapes an i thread onto a molded article; must be unscrewed for finished piece.

**thread plug gage** [DES ENG] A thread gage used to n female screw threads.

**thread protector** [ENG] A short-threaded ring to scre a pipe or into a coupling to protect the threads while the being handled or transported. Also known as pipe-thr extor.

**thread rating** [ENG] The maximum internal working pressure allowable for threaded pipe or tubing joints; imposed pressure systems, chemical processes, and oil-well sys

**thread ring gage** [DES ENG] A thread gage used to n male screw threads.

**thread waste** [TEXT] The hard, thready waste left c bins or collected during operations such as spinning, tu and weaving.

**three-address code** [COMPUT SCI] In computers, a pte-address code which includes three addresses, usual addresses from which data are taken and one address w:

result is entered; location of the next instruction is not sp and instructions are taken from storage in preassigned **three-address instruction** [COMPUT SCI] In compu instruction which includes an operation and specifies th of three registers.

**three-arm protractor** [NAV] An instrument consist sentially of a circle graduated in degrees, to which is a one fixed arm and two arms pivoted at the center and pi with clamps so that they can be set at any angle to the fixi within the limits of the instrument; used for finding a position when the angles between three fixed and known are measured. Also known as station pointer.

**three-body problem** [MECH] The problem of predicting motions of three objects obeying Newton's laws of motion attracting each other according to Newton's law of grav

**three-day fever** See phlebotomus fever.

**three-decibel coupler** [ELECTROMAG] Junction waveguides having a common H wall; the two guides are piled together by H-type aperture coupling; the coupling that 50% of the power from either channel will be fed i other. Also known as Riblet coupler; short-slot couple

**three-decision problem** [STAT] A problem in w choice must be made among three possible courses of

**three-dimensional** [SCI TECH] Giving the illusion of in three dimensions.

**three-dimensional display system** [ELECTR] A rad display which shows range, azimuth, and elevation; for inst G display.

**three-dimensional flow** [FL MECH] Any fluid flow w not a two-dimensional flow.

**three-index symbols** See Christoffel symbols.

**three-input subtracter** See full subtracter.

**three-jaw chuck** [DES ENG] A drill chuck having th rated-face movable jaws that can grip and hold fast an i drill rod.

**three-j number** [QUANT MECH] A coefficient used pling eigenfunctions of two commuting angular mom form eigenfunctions of the total angular momentum; related to the Clebsch-Gordan coefficients. Also kn Wigner 3-j symbol.



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**thread**

4 entries found.

**thread** [1, noun]  
**thread** [2, verb]  
bean thread  
screw thread

**Main Entry:** **1thread**

**Pronunciation:** \thred\

**Function:** **noun**

**Etymology:** Middle English *thred*, from Old English *thred*; akin to Old High German *drāt* wire, Old English *thr̄wan* to cause to twist or turn — more at [THROW](#)

**Date:** before 12th century

**1** a : a filament, a group of filaments twisted together, or a filamentous length formed by spinning and twisting short textile fibers into a continuous strand b : a piece of thread

**2** a : any of various natural filaments <the *threads* of a spiderweb> b : a slender stream (as of water) c : a projecting helical rib (as in a fitting or on a pipe) by which parts can be screwed together : [SCREW TUREAP](#)

**3** : something continuous or drawn out: as a : a line of reasoning or train of thought that connects the parts in a sequence (as of ideas or events) <lost the *thread* of the story> b : a continuing element <the *thread* of melancholy marked all his writing> c : a series of newsgroup messages following a single topic

**4** : a tenuous or feeble support <hung on by a *thread*>

**5 plural:** [CLOTHING](#)

— **thread-less** **—** **thread-like**

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